



# The role of financing accessibility on boosting micro scale coastal communities' fisheries related business activities: case study from Kei Islands

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**Abstract.** Financial capital is one of the integral factors in moving the business. Accessing the financial sources either from loan and/or monetize the asset is key to boost the ability to gain and gather the capital needed to expand and maintain the business flow. Fisheries and marine related business activities included, even so to small medium enterprises and more so to micro scale of fisheries business. In small islands region of Kei Islands, most of coastal communities that currently running fisheries and marine related business activities namely fishing, marine farming, and marine ecotourism are in micro scale based. Many researchers and studies agreed that for micro scale, it is hard to access the fund due to lack of collateral own by them. Therefore, the aimed of this the role of financing accessibility to support to production of fisheries and marine of coastal communities in Kei Islands. In order to do so, the methodology of study was k-mean clustering to obtain micro scale actors that willing to and able to access the financing aid either from state bank, lending institution and private entities. This study also used multi-linear regression analysis to view the role of the financing accessibility to coastal communities' fisheries and marine production. The respondent of the study were coastal communities who are sellers, fishermen, marine farmer and micro scale actors in the region with 103 respondents. Data collecting using purposive sampling, the data collecting start from May to August 2021. The result of the study we have found that, more communities were able to access and have higher need for the financial entities than those who unable and have lower interest for financing accessibility. Moreover, the number of expenses, the type of fisheries and marine activities and sex were three factors that influence the production of fisheries and marine activities.

## I. INTRODUCTION

When MSMEs are able to optimize their viability, they have far-reaching consequences. Not only will it be able to absorb more labor than big businesses, but it will also have the potential to be a vehicle for poverty alleviation. Although large industries generate more revenue in terms of goods and services and rupiah than MSMEs, there is an inequity in the profit-sharing process because owners of large industries will naturally receive a larger share when they generate profits, whereas when they generate losses, they will reduce their workforce. Meanwhile, MSMEs are becoming increasingly self-sufficient in their business operations, both through periods of profit and loss.

Most of coastal communities that currently running fisheries and marine related business activities namely fishing, marine farming, and marine ecotourism are in micro scale based. Many researchers and studies agreed that for micro scale.

This is because the lower middle class, in general, is unaware of the processes governing banks and other financial organizations, and the government pays little attention. Additionally, banking, as a financial organization that acts as a lender to parties in need of money, distributes funds by imposing fairly onerous criteria and requirements on potential debtors, such as guarantees, financial statements, and pay slips. Meanwhile, not everyone who works as a small or medium-sized business meets the bank's criteria.

Financial information is critical for MSMEs in the process of company growth and success (Megginson, et al. 2000). Along with the interests of MSMEs and their creditors, financial information on MSMEs is required in connection with their relationship with the government (in the field of taxation). This financial data is often presented in the form of a report referred to as a financial report. MSMEs need extra funding to

expand their businesses via banks or financial organizations. Several commercial banks have included MSMEs into their lending programs, which is beneficial for expanding MSMEs' access to capital (Nkundabannyanga et al. 2014). MSMEs have barriers to financing; it is not simple to get access to the financial sector in Indonesia, and with difficulties in the institutional system, the Indonesian government aims to strengthen the real sector in order to overcome these barriers. By executing the process governed by Bank Indonesia's regulations for MSMEs' access to finance. However, this strategy has not been implemented owing to excessive interest rates and the non-availability of guarantees from MSMEs (Kurniawan dan Fauzan, 2014).

According to Lusimbo and Muturi (2015), access to finance is defined as the absence of barriers linked to capital provider processes or administrative expenses associated with MSMEs loan applications. According to Oktavianti et al. (2017), official financing institutions have more access to funding and a far broader supply of money than informal institutions (lenders). Banking and financial institutions are the sectors that have the greatest influence on modern society's economic activities; as financial institutions, banks serve as a repository for companies, government agencies, private individuals, and businesses that save money through financing activities and various services provided; banks also serve as a clearinghouse for payment system mechanisms.

As study by Teniwut et al. (2017) showed that there are complicated factors that contribute to inability of coastal communities in Southeast Maluku Regency to thrive and one of those is

maintaining quality and quantity of their production. Therefore, the aimed of this the role of financing accessibility to support to production of fisheries and marine of coastal communities in Kei Islands. In order to do so, the methodology of study was k-mean clustering to obtain micro scale actors that willing to and able to access the financing aid either from state bank, lending institution and private entities.

## II. METHODOLOGY

### 2.1. Study Location

Astronomically, Southeast Maluku Regency is located at a coordinate position of 131° - 133° 5' East Longitude and 5° - 6.5° South Latitude. Southeast Maluku is strategically situated, bordered by two huge seas that serve as fishing grounds, the Banda Fishing Ground and the Arafura Fishing Ground. Southeast Maluku's geographical and economic location is very favorable. Because Southeast Maluku has always been a political and economic hub in Maluku's southern region. Additionally, Southeast Maluku is a highly promising commerce sector due to its location on the trade route between southern eastern Indonesia and southern Papua. Southeast Maluku Regency's geographical features include coastal regions and tiny islands with many straits and bays. Southeast Maluku, being an archipelago, offers great potential for fisheries and tourism. Southeast Maluku is rich in potential marine resources, both fish and non-fish, having a total coastal length of 632.15 kilometers. As total in 2020, number of MSMEs verified in local government is around 1920, were most of them are micro and small-scale enterprises.



Figure 1. Study Location

Table 1. Respondent Characteristic

Data	Frequency	Percent
<b>Number of Family Member</b>		
Less than 2 member	2	1.9
2-3 member	14	13.6
4-5 member	44	42.7
Over 5 member	40	38.8
No Family member	3	2.9
<b>Sex</b>		
Male	35	34.0
Female	68	66.0
<b>Age</b>		
< 20 Years	2	1.9
20-30 Years	30	29.1
30-40 Years	20	19.4
40-50 Years	25	24.3
>50 Years	22	21.4
<b>Education</b>		
Elementary and Non-School	28	27.2
Junior high school	22	21.4
Senior High School	45	43.7
Bachelor and Diploma (D3 and S1)	8	7.8
<b>Type of business</b>		
Fisherman	3	2.9
Seller	29	28.2
Cultivation Farmer	1	1.0
Other: sellers, distributor	70	68.0
<b>Income</b>		
< IDR. 1.000.000,-	34	33.0
IDR. 1.000.000,- IDR. 2.000.000,-	24	23.3
IDR. 3,000,000,-	13	12.6
> IDR. 3,000,000 – IDR. 4,000,000,-	6	5.8
> IDR. 4,000,000 – IDR. 5.000.000,-	8	7.8
> IDR. 5.000.000,-	18	17.5

Sources: Data survey

## 2.2. Sample and respondent

The respondent of the study were coastal communities who are sellers, fishermen, marine farmer and micro scale actors in the region with 103 respondents. Data collecting using purposive sampling, the data collecting start from May to August 2021.

According to the survey findings collected from a total of 103 respondents, more than 75% of respondents had sufficient family obligations, defined as four to more than five family members. The majority of responses are female, with an average age of 40 to 50 years and a total of more than 60% ranging from 30 to more than 50 years. Elementary school graduates account for the majority of respondents at 27.2 percent, followed

by high school and junior high school graduates at 8%, while undergraduate and diploma graduates account for only 8%. The majority of respondents work as sellers, distributors, and distributors, while the remaining 32% are fishery business actors such as fishermen and farmers. The majority of respondents had an income of less than 1 million rupiah to 2 million rupiah.

## 2.3. Analysis Method

### 2.3.1. K-Mean Cluster

When it comes to data mining, the K-Means algorithm is a popular choice because of its advantages, which include being simple to implement, being relatively fast in terms of computational time and being widely used to solve

a wide range of computational problems. The K-Means algorithm is a popular choice because it has a number of advantages, including being simple to implement, being relatively fast in terms of computational time, and being widely used. Kodinariya and Makwana (2013) argue that the k-means method is the most popular grouping method. We processed the method using Rapidminer tools.

The k-means method takes as input parameters the number of k and a collection of data sets from a number of objects to be included in k classes/clusters, with the goal of increasing intra-cluster similarity while decreasing inter-cluster similarity. Cluster similarity is calculated

by averaging the values of all objects in the cluster, which may be thought of as the cluster's core. According to Gudono (2014), two assumptions must be met when performing K-Means Cluster analysis. First, the sample must reflect the population, which can be determined using the Kaiser Mayer Olkin (KMO) test; if the KMO value is between 0.5 and 1, the sample is said to represent the population or representative samples. The second assumption is that there is no multicollinearity; if the p-value is greater than 0.05, reject H0, indicating that there is no connection between variables (there is no multicollinearity). As seen on table 2, where all parameter from KMO test proves that the K-mean cluster can be proceed.

Table 2. KMO Test

KMO Test	Bartlett's of Sphericity		
	Approx Chi Square	df	P value
0.519	101.180	28	0.000

2.3.2. Multi-Linear Regression Analysis

Multiple linear regression analysis is used when there are more than one independent variables. The multiple linear regression method was used to evaluate if two or more independent variables (X1, X2, X3,..., Xk) had a significant impact on the dependent variable (Y). The population's multiple linear regression model is as follows (Supranto, 2004):

$$Y = a + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + \beta_5X_5 + \beta_6X_6 + \beta_7X_7 + \beta_8X_8 + \beta_9X_9 + \beta_{10}X_{10} + \beta_{11}X_{11} + \beta_{12}X_{12} + \beta_{13}X_{13} + \beta_{14}X_{14} + \beta_{15}X_{15} + \beta_{16}X_{16} + e$$

Where:

- Y = Income
- X1 = Access
- X2 = Age
- X3 = Amount of Loan
- X4 = Experience on Loan
- X5 = sex
- X6 = Basic Knowledge of financing institution
- X7 = Type MSMEs field of work
- X8 = Preference
- X9 = Education
- X10 = Institution Knowledge
- X11 = Advance Knowledge of financing institution
- X12 = Family member
- X13 = Trust

- X14 = Distance to Access financing institution
- X15 = Ability to pay back the loan
- X16 = Mechanism
- a = Constant
- $\beta$  = Regression coefficient
- e = Error

The multicollinearity test determines whether or not the regression model's independent variables have a linear relationship (Priyatno, 2008). From the regression result, we have found the variance inflation factor (VIF) were under 10, thus the result passed the multicollinearity test. In the regression model, the autocorrelation test compares the residuals of one observation to the residuals of previous observations (Priyatno, 2008), from the DW value in the regression results, which is 2.121, then with 16 independent variables with a sample size of 103 result dU and dL values are respectively 1.35709 2.02159 while the 4-dL and 4-dU values are 1.97841 2.64291 . Thus, it can be concluded that the autocorrelation test passed. The heteroscedasticity test checks if the residuals of one observation differ from the residuals of another. As seen in figure 2, that all point was scattered therefore the result also passed heteroscedasticity test. The variation of the residual from one observation to the next is termed homoscedasticity. The normality test is used to determine if a collection of data or variables is regularly distributed. As shown in figure 3 that all

data floating around the trend line, makes the regression result also passed normality test.

### III. RESULT AND DISCUSSION

#### 3.1. Clustering Analysis

From the result of the study as seen in figure 4. This cluster is classified according to three criteria: first, understanding of financing methods; second, desire to utilize financial institution facilities; and third, willingness to accept and make loans. We have found that, more than half of

respondents in our research had a working understanding of new funding methods offered by both public and private organizations. Additionally, as illustrated in Figure 5, the group in cluster 0, which tends to avoid using financing facilities, is denoted by blue dots gathered in the lower left corner, while the group in red cluster 1, which is denoted by red dots gathered in the top right corner, are groups whose willingness to use financing facilities is piled at the corner top right.

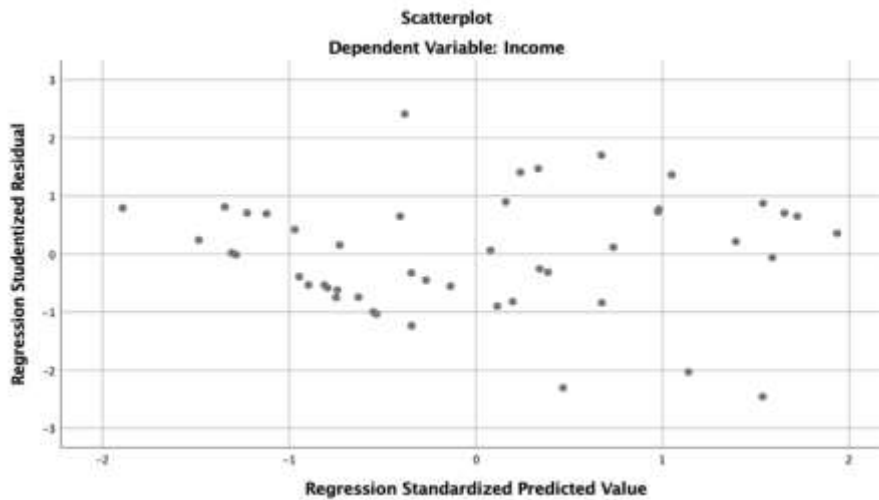


Figure 2. Scatter plot result

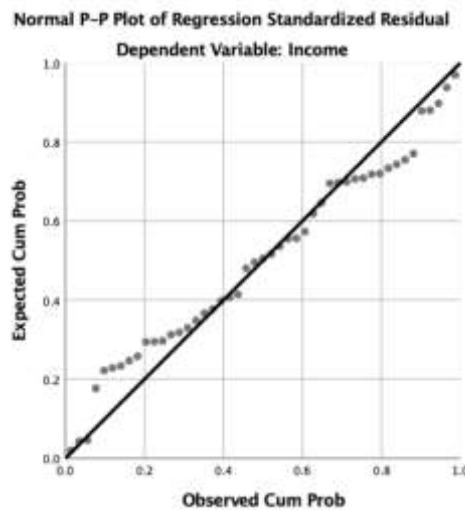


Figure 3. Normality plot

#### k-Means - Summary

Number of Clusters: 2  
 Distance Measure: Squared Euclidean Distance  
 Average Cluster Distance: 13.522  
 Davies-Bouldin Index: 1.703



Figure 4. K-means summary

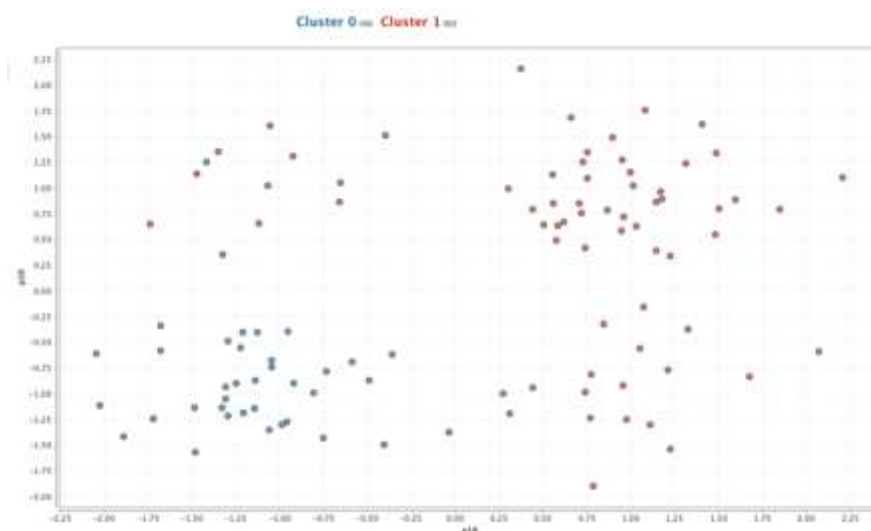


Figure 5. K-means summary

Additionally, the findings indicate that cluster 0 has a greater level of spending than monthly income, with the predominant occupations being fish and vegetable vendors in regional markets. While cluster 1 has a monthly revenue that is much higher than the expenses spent, with occupations such as store owners, fisherman, aquaculture farmers, and agricultural producers, cluster 2 has a monthly income that is significantly less than the costs incurred. This

finding, of course, validates the respondents' funding behavior. Cluster 0 often avoids financial institutions due to their poor capacity to pay and run their businesses. In comparison to the cluster 1 respondent group. Thus, further counseling is critical, particularly on company management, including revenue and expense management, so that these micro entrepreneurs may operate their companies more sustainably and improve their level of wellbeing.

Table 3. Regression result

Dependent Variable	Coefficient	P value	Decision
Access	1.968	.053**	Significant
Age	.084	.741	Not Significant
Amount of Loan	.009	.845	Not Significant
Expense per month	.583	.000***	Significant
Sex	-1.179	.059**	Significant
Basic Knowledge of financing institution	.710	.371	Not Significant
Type MSMEs field of work	.004	.988	Not Significant
Preference	-.019	.579	Not Significant
Education	-.058	.848	Not Significant
Institution Knowledge	-.242	.768	Not Significant
Advance Knowledge of financing institution	-.042	.953	Not Significant
Family member	-.249	.524	Not Significant
Trust	.245	.820	Not Significant
Distance to Access financing institution	.309	.459	Not Significant
Ability to pay back the loan	-1.515	.132	Not Significant
Knowledge about Mechanism	-1.150	.262	Not Significant

\*\* α 10% ; \*\*\*α 1%. F value: 2.741 (0.08\*\*\*); R<sup>2</sup> : 59.4%

### 3.2. Impact of Financing Accessibility to Coastal Communities MSMEs Performance

According to the regression analysis findings (Table 3), three factors substantially influence the production performance of MSMEs owned by coastal communities in this area. The element that has a compelling and substantial beneficial effect is the monthly spending on the business being conducted. This outcome is

comprehensible when monthly production-related expenses increase, the requirement for financing increases, and other variables such as current income, company growth activities, and changing environmental circumstances stay constant. As with the present status of the COVID-19 pandemic, unanticipated government expenditure to comply with health standards has boosted microentrepreneurs' spending in this area.

Additionally, when compared to the cluster analysis findings obtained in this research, the group of microentrepreneurs with higher expenditures than income is more likely to be attributable to a lack of management competence or a lack of understanding about financing methods. The findings of this regression further clarify and contribute to our knowledge of the group's behavior. They want to get loans in order to enhance their company performance, but their understanding of loans and everything connected to loans is very restricted. For other factors, such as a lack of managerial ability in business management, this is not an impediment, as Mutegi et al. (2015) discovered that MSMEs are more obedient to loan repayments than large entrepreneurs and corporate conglomerates, and what is required is an increase in financing literacy among MSMEs business actors. Parties may rely on the dedication and work ethic of MSMEs, as shown by Moro and Fink's study (2013).

Gender and accessibility of access are two other factors that have a major impact on how MSMEs obtain finance. In terms of gender, female microenterprises support and want to utilize financing facilities, while ease of access to funding has a beneficial impact in terms of rationalizing this behavior. Additionally, these findings indicate that when micro-enterprises are provided with better access and increased understanding of financing mechanisms, the majority of micro-enterprises in this area are eager to use financing facilities. This, of course, will affect the village's economy and will have a beneficial effect on the economy of this area and others in Indonesia with similar socioeconomic and geographical features.

According to the regression findings, particularly the indicators for evaluating the regression model, namely the F value and R squared, the F value has a significance level of alpha 1%, indicating that the model in this study is represented by the variables utilized to accomplish the research goals. With a R squared of 59.2 percent, this indicates that more than half of the variables required to evaluate the effect of access to finance on the production performance of MSMEs in coastal areas have been identified. Although the value of R squared is small, Crenshaw and Robison (2010) discovered that when regression is performed on human samples rather than time series or cross-section data, the resultant R squared value is often very small. Thus, the results of this regression can be validly used for analysis.

#### IV. CONCLUSION

Obtaining funding for business via loans or asset monetization is critical to expanding and maintaining company flow. MSME's, especially micro-scale fisheries business operations, are covered. Most coastal villages in Kei Islands' small islands area presently operate micro-scale fisheries and marine related businesses like as fishing, aquaculture, and ecotourism and other related activities include agriculture. This study found that when microenterprises have improved access to and knowledge of finance mechanisms, the majority of microenterprises in this sector are willing to use financing facilities. Naturally, this would have an impact on the village's economy and will benefit the economy of this region and others in Indonesia with comparable socioeconomic and geographical characteristics.

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